

424 Rec'd PCT/PIU 15 FEB 2000

FORM PTO-1390
(REV. 9-93)

U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICE

ATTORNEY'S DOCKET NUMBER
10191/1284

**TRANSMITTAL LETTER TO THE UNITED STATES
DESIGNATED/ELECTED OFFICE (DO/EO/US)
CONCERNING A FILING UNDER 35 U.S.C. 371**

U.S. APPLICATION NO. (If known, see 37 CFR 1.5)

097485816

INTERNATIONAL APPLICATION NO.
PCT/DE98/02132

INTERNATIONAL FILING DATE
28th July 1998
(28.07.98)

PRIORITY DATE CLAIMED:
15 August 1997
(15.08.97)

TITLE OF INVENTION
METHOD OF FORMATTING A DATA FLOW BY CODING BASED ON THE SEQUENCE OBJECTS OF ANIMATED IMAGES

APPLICANT(S) FOR DO/EO/US
WOLLBORN, Michael

Applicant(s) herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☒ This is an express request to begin national examination procedures (35 U.S.C. 371(f)) immediately rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).
4. ☒ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
5. ☒ A copy of the International Application as filed (35 U.S.C. 371(c)(2))
 - a. ☐ is transmitted herewith (required only if not transmitted by the International Bureau).
 - b. ☒ has been transmitted by the International Bureau.
 - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☒ A translation of the International Application into English (35 U.S.C. 371(c)(2)).
7. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
 - a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau).
 - b. ☐ have been transmitted by the International Bureau.
 - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
 - d. ☒ have not been made and will not be made.
8. ☐ A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ☒ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)) (UNSIGNED).
10. ☒ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

Items 11. to 16. below concern other document(s) or information included:

11. ☒ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
12. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
13. ☒ A **FIRST** preliminary amendment.
☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
14. ☐ A substitute specification.
15. ☐ A change of power of attorney and/or address letter.
16. ☒ Other items or information: International Search Report, Preliminary Examination Report and PCT/RO/101.

Express Mail No.:

EM360462374US

17. ☒ The following fees are submitted:**Basic National Fee (37 CFR 1.492(a)(1)-(5)):**

Search Report has been prepared by the EPO or JPO \$840.00

International preliminary examination fee paid to USPTO (37 CFR 1.482) ... \$670.00

No international preliminary examination fee paid to USPTO (37 CFR 1.482) but
international search fee paid to USPTO (37 CFR 1.445(a)(2)) \$760.00Neither international preliminary examination fee (37 CFR 1.482) nor international
search fee (37 CFR 1.445(a)(2)) paid to USPTO \$970.00International preliminary examination fee paid to USPTO (37 CFR 1.482) and all
claims satisfied provisions of PCT Article 33(2)-(4) \$96.00

CALCULATIONS | PTO USE ONLY

ENTER APPROPRIATE BASIC FEE AMOUNT =

\$ 840

Surcharge of \$130.00 for furnishing the oath or declaration later than ☐ 20 ☐ 30 months
from the earliest claimed priority date (37 CFR 1.492(e)).

\$

Claims	Number Filed	Number Extra	Rate		
Total Claims	4 - 20 =	0	X \$18.00	\$0	
Independent Claims	1 - 3 =	0	X \$78.00	\$0	
Multiple dependent claim(s) (if applicable)			+ \$260.00	\$	

TOTAL OF ABOVE CALCULATIONS =

\$840

Reduction by 1/2 for filing by small entity, if applicable. Verified Small Entity statement must
also be filed. (Note 37 CFR 1.9, 1.27, 1.28).

\$

SUBTOTAL =

\$840

Processing fee of \$130.00 for furnishing the English translation later the ☐ 20 ☐ 30
months from the earliest claimed priority date (37 CFR 1.492(f)).

+

\$

TOTAL NATIONAL FEE =

\$840

Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be
accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property

+

\$

TOTAL FEES ENCLOSED =

\$840

Amount to be:

refunded \$

charged \$

a. ☐ A check in the amount of \$_____ to cover the above fees is enclosed.b. ☒ Please charge my Deposit Account No. 11-0600 in the amount of \$840.00 to cover the above fees. A duplicate copy of this
sheet is enclosed.c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to
Deposit Account No. 11-0600. A duplicate copy of this sheet is enclosed.**NOTE:** Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must
be
filed and granted to restore the application to pending status.SEND ALL CORRESPONDENCE TO:
Kenyon & Kenyon
One Broadway
New York, New York 10004

SIGNATURE

Richard L. Mayer, Reg. No. 22,490

NAME

February 15, 2000

DATE

416 Rec'd PCT/PTO 15 FEB 2000

[10191/1284]

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s) : Michael WOLLBORN
 Serial No. : To Be Assigned
 Filed : Herewith
 For : METHOD OF FORMATTING A DATA FLOW BY
 CODING BASED ON THE SEQUENCE OBJECTS
 OF ANIMATED IMAGES

Examiner : To Be Assigned
 Group Art Unit : To Be Assigned

Assistant Commissioner for Patents
 Washington, DC 20231

PRELIMINARY AMENDMENT

Sir:

Kindly amend the above-identified application before examination
 as follows:

IN THE SPECIFICATION:

On page 1, line 1, change "Related Art" to
 - Field Of The Invention - .

On page 1, before line 7, insert:
 - Background Information - .

On page 1, line 26, change "Diagram" to - Figure - .

On page 3, line 3, change "Advantages of the Invention" to
 - Summary Of The Invention - .

On page 3, line 5, change "With the measures" to - With the
 method- .

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On page 3, line 5, change "invention" to - -invention,- -.

On page 4, delete lines 1 and 2 and insert:

- Brief Description Of The Drawings

Figure 1 shows various syntax structures.

Figure 2 shows the structure of a data stream, according to an embodiment of the present invention.

Figure 3 shows another embodiment of the present invention.

Detailed Description- - .

On page 4, line 3, change "Diagram" to - -Figure- -.

On page 4, line 21, change "Diagram" (both occurrences) to - -
Figure - -.

On page 5, lines 2 and 6, change "Diagram" to - -Figure- -.

On page 5, line 12, change "(Diagram 2)" to - -(Figure 2)- -.

On page 6, line 1, change "Claims" to
- -What Is Claimed Is- -.

IN THE CLAIMS:

Please cancel original claims 1-4 and please cancel substitute claims 1-4, without prejudice.

Please add the following new claims:

5. (New) A method for processing a data stream for object-based coding of moving image sequences for video objects having any size and shape, comprising the steps of:

inserting a local time base information before an actual information on a video object; and

inserting signaling information, indicating whether the video object is to be decoded for playback or displayed, into the data stream one of before and after the time base information, regardless of an external form of the video object.

6. (New) The method according to claim 5, wherein the signaling information indicates a coded state and a non-coded state for the video object, and further comprising the steps of:

terminating a transmission of information on the video object for the non-coded state; and

suppressing a display for the video object.

7. (New) The method according to claim 5, further comprising the step of, for video objects whose signaling information corresponds to the non-coded state, no longer displaying a corresponding video object at a time determined by the local time base information.

8. (New) The method according to claim 5, further comprising the step of, for video objects whose signaling information corresponds to the non-coded state, no longer displaying a corresponding video object at a next time when there is to be a display after a time determined by the local time base information.

IN THE ABSTRACT:

On page 8, line 1, change "Abstract" to

-- Abstract Of The Disclosure--.

On page 8, lines 7-9, change "object.
In" to - -object. In- -.

REMARKS

This Preliminary Amendment cancels, without prejudice, claims 1-4 in the underlying PCT Application No. PCT/DE98/02132, and adds new claims 5-8. The new claims conform the claims to U.S. Patent and Trademark Office rules and do not add new matter to the application.

The amendments to the specification and abstract are to conform the specification and abstract to U.S. Patent and Trademark Office rules, and do not introduce new matter into the application.

The underlying PCT Application No. PCT/DE98/02132 includes an International Search Report, dated January 22, 1999, a copy of which is included. The Search Report includes a list of documents that were considered by the Examiner in the underlying PCT application.

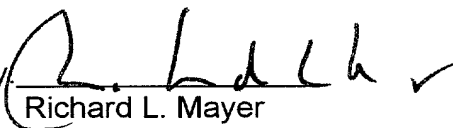
The underlying PCT Application No. PCT/DE98/02132 also includes an International Preliminary Examination Report, dated September 1, 1999, a copy of which is included, including a translation.

Applicant asserts that the present invention is new, non-obvious, and useful. Prompt consideration and allowance of the claims are respectfully requested.

Respectfully Submitted,

KENYON & KENYON

Dated: 2/15/00

By: 
Richard L. Mayer
Reg. No. 22,490

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METHOD OF FORMATTING A DATA FLOW BY CODING BASED ON THE
SEQUENCE OBJECTS OF ANIMATED IMAGES

Related Art

The present invention relates to a method of processing a
data stream for object-based coding of moving image
5 sequences which may have any size and shape.

MPEG-4 Video Verification Model Version 7.0, Bristol, April
1997, MPEG-97/N 1642, ISO/IEC JTC/SC 29/WG 11 specifies an
encoder and decoder for object-based coding of moving image
sequences, where rectangular images of a fixed size are no
longer coded and transmitted to the receiver within a video
session (VS), but instead video objects (VO) of any size and
shape are coded and transmitted. These video objects may
then be further subdivided into different video object
layers (VOL) to represent different resolution levels of a
video object, for example. The image of a VO of a certain
layer in the plane of the camera image at a certain time is
the video object plane (VOP). Thus, the relationship between
VO and VOP is equivalent to the relationship between image
20 sequence and image in transmission of rectangular images of
a fixed size.

The syntax for transmission of a VOP specifies first the
signaling of the local time base of a VOP. This indicates
25 the time with respect to previously transmitted VOPs at
which the instantaneous VOP is to be displayed. Figure 1
shows the syntax structure for elements VS, VO, VOL and the
relevant parts for element VOP.

The parts of VOP syntax shown here are relevant in this connection. The "modulo time base" element indicates the local time base of the VOP in increments of 1000 milliseconds, and the "VOP time increment" element also indicates the local time base in increments of one millisecond. The "VOP prediction type" element indicates which type of prediction is to be used for the VOP. There are four possibilities here: I-VOP, i.e. no prediction is used, P-VOP, i.e. the prediction is based on the preceding VOP, B-VOP, i.e. the prediction is based on the preceding and following VOPs, and S-VOP, where the prediction is based on a SPRITE-VOP which is either transmitted once at the start of the video session or is derived from the reconstructed data during transmission.

In addition to transmission of the local time base of a VOP, the syntax specifies a possibility of signaling the "coded/not coded" state for a VOP. In the case of the "not coded" state for the VOP, no additional data is transmitted after the corresponding signaling elements, and if there is a new VOP, transmission thereof is begun. On the receiver end, a "not coded" VOP is not decoded further and is not displayed.

Here the "video object layer shape" element, which is specified in the area of the header info of the syntax of the respective VOL, indicates whether the VO is a rectangular VO ($= 0$) or a VO of any size and shape ($\neq 0$). Then for the case of a VO of any size and shape, the width of the rectangle surrounding the VOP is indicated with the help of the "VOP width" element. If this width is set to the value 0, this signals that the VOP has the "not coded" state. Then the transmission of the data of the

instantaneous VOP is terminated and transmission of the next VOP is begun.

Advantages of the Invention

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With the measures according to the present invention it is possible to transmit less data for a non-coded video object, i.e. for a video object that is not to be displayed immediately. In contrast with the aforementioned related art, it is simpler and more comprehensible to use a definite element for signaling the state of whether or not a video object is to be displayed.

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With the method according to the present invention, it is also possible to transmit and thus to signal the coded/not coded state for rectangular VOs, which had not been possible with the implementation according to the related art.

The signaling information indicating whether a video object is coded or not coded may be inserted before or after local time base information in the data stream. If the signaling information is inserted before the local time base information, even less data need be transmitted for a non-coded VOP than when the signaling information is inserted after the local time base, because in this case the local time base information is not transmitted. However, in this case, the "blanking out," i.e. suppression of the display of a video object, is no longer possible at a very specific point in time, but instead it can only take place at the next time following the receipt of the non-coded VOP, when an image is displayed at the receiver end.

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Description of Embodiments

Figure 2 shows the structure of the data stream for the transmission of video objects. At the beginning (first line of the diagram) the "video session start code" element is transmitted and then the information for video objects 1, 2, ..., n is transmitted. At the end, the "video session end code" appears. The second line shows the structure of the transmission format for "video object 1." It begins with the "video object start code" followed by the "video object identification" and the elements for "video object layers" 1 through n. The third line shows the structure of a single "video object layer" element. It begins with the "video object layer start code" followed by the "video object layer identification," the "header info" and elements 1 through n for the "video object plane." The fourth line shows the structure of a single "video object plane" element. It begins with the "VOP start code" followed by the local time base information "modulo time base" and the "modulo time increment" element. This structure thus corresponds to the structure according to Figure 1. In contrast to Figure 1, however, a new element in the form of signaling information is always inserted into the data stream according to the present invention, indicating whether the video object is to be decoded for playback or displayed. The signaling information is also inserted regardless of the external form of a video object. This signaling information is composed of the "VOP coded" element and is defined so that the value 0 denotes the "not coded" state and the value 1 denotes the "coded" state. For the receiver, it is necessary to define the fact that the corresponding VO is no longer displayed for the case "VOP coded == 0" at the time indicated by the local time base or at the next following time when an image is displayed at the receiver end. In contrast with the implementation according to Figure 1, there is no longer any

signaling by the "VOP width" element.

The "VOP coded" element can also be inserted into the data stream after the "VOP prediction type" element. Figure 3 shows another embodiment of the present invention. "VOP coded" signaling information is then placed directly after the "VOP start code" element, i.e. before the local time base information "modulo time base." For this embodiment as well, "VOP width" signaling is no longer performed. In contrast with the first embodiment (Figure 2), even less data need be transmitted for a non-coded VOP, because the local time base need not be transmitted. However, in this case the "blanking out," i.e. no longer displaying a VO, is no longer possible at a very specific point in time, but instead it can only take place at the next time following the receipt of the "non-coded" VOP, when an image is displayed at the receiver end.

New Claims

1. A method of processing a data stream for object-based coding of moving image sequences for video objects having any size and shape, including the following steps:

- a local time base information is inserted before the actual information on the video object,
- signaling information indicating whether a video object is to be decoded for playback or displayed is always inserted into the data stream before or after this time base information, regardless of the external form of the video object.

2. The method according to Claim 1, characterized in that the signaling information indicates two states for a video object, namely the coded state and the non-coded state, where the transmission of information on the video object is terminated for the non-coded state and the display is suppressed for this video object.

3. The method according to Claim 1 or 2, characterized in that for video objects whose signaling information corresponds to the non-coded state, the corresponding video object is no longer displayed at a time determined by the local time base information.

4. The method according to Claim 1 or 2, characterized in that for video objects whose signaling information corresponds to the non-coded state, the corresponding video object is no longer displayed at the next time when there is to be a display after the time

1 1

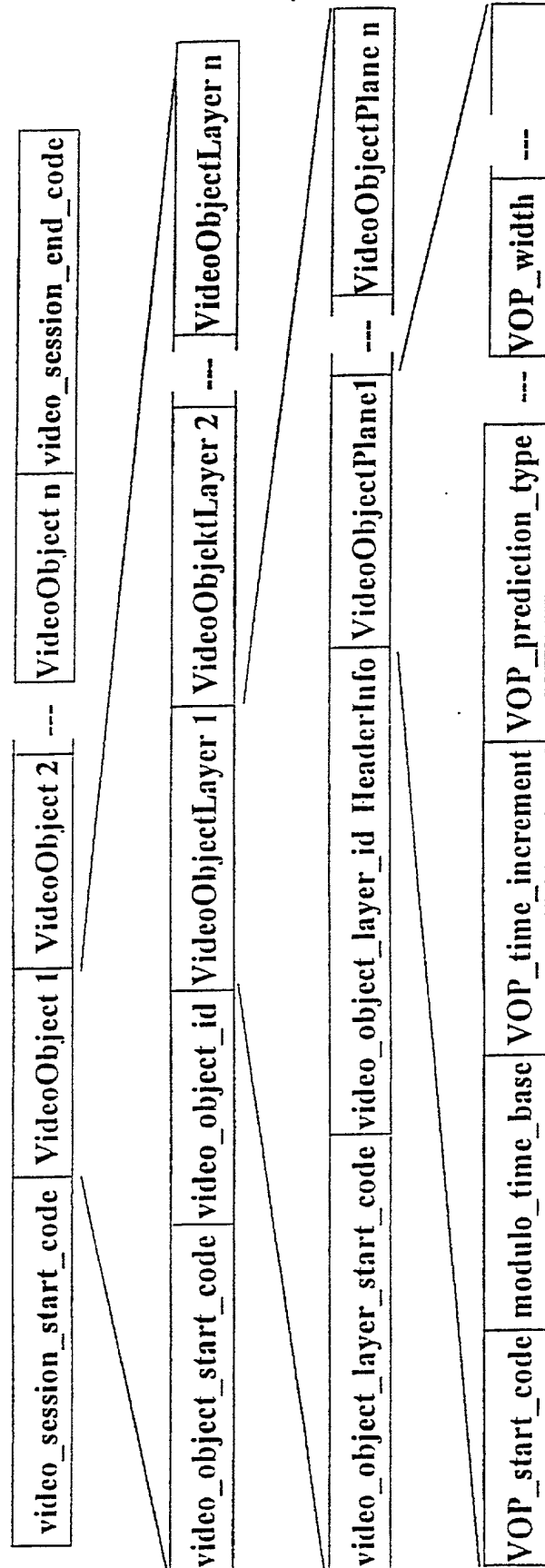
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Abstract

For object-based coding of moving image sequences for video
objects, signaling information indicating whether the video
5 object is to be decoded for playback or displayed is always
transmitted regardless of the external form of a video
object.

In contrast with options available in the past, less data
10 need be transmitted.



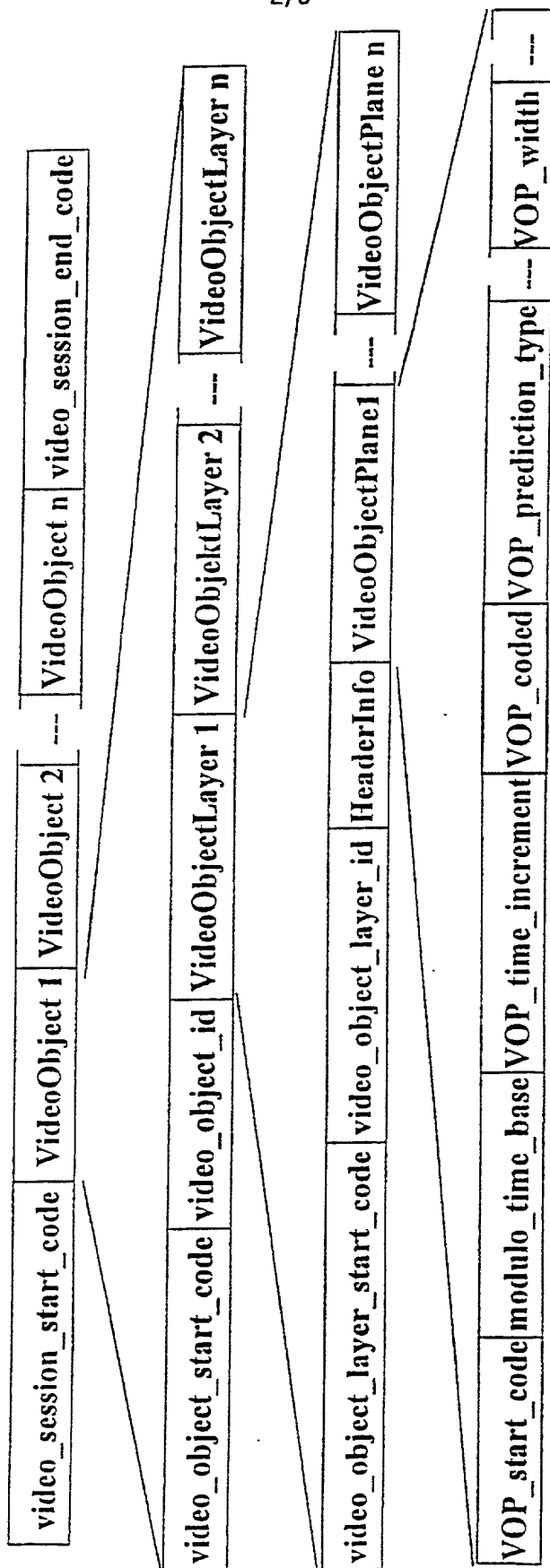


Fig. 2

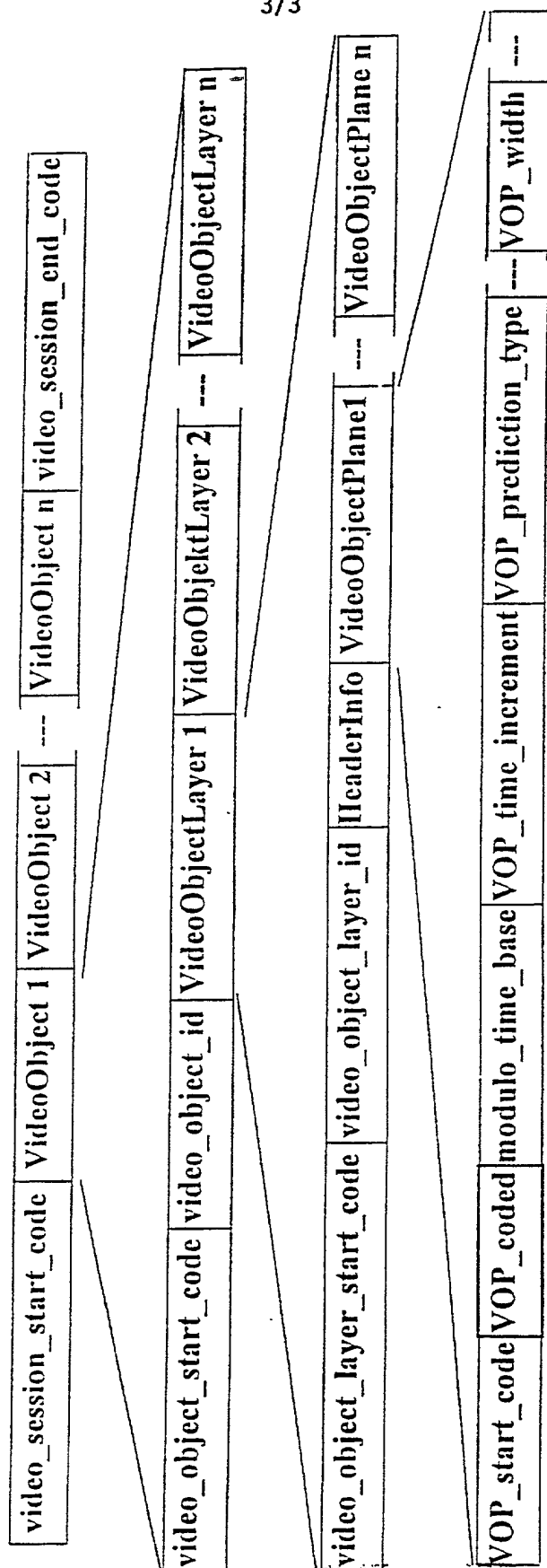


Fig. 3

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**COMBINED DECLARATION AND
POWER OF ATTORNEY FOR PATENT APPLICATION**

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below adjacent to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled **METHOD OF FORMATTING A DATA FLOW BY CODING BASED ON THE SEQUENCE OBJECTS OF ANIMATED IMAGES**, and the specification of which:

- ☐ is attached hereto;
- ☐ was filed as United States Application Serial No. _____ on _____, 19__ and was amended by the Preliminary Amendment filed on _____, 19__.
- ☒ was filed as PCT International Application Number PCT/DE98/02132 the 28th day of July, 1998.
- ☒ an English translation of which is filed herewith.

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, §1.56(a). I hereby claim foreign priority benefits under Title 35, United States Code § 119 of any foreign application(s) for patent or inventor's certificate or of any PCT international applications(s) designating at least one country other than the United States of America listed below and have also identified below any foreign application(s) for patent or inventor's certificate or any PCT international application(s) designating at least one country other than the United States of America filed by me on the same subject matter having a

filing date before that of the application(s) of which priority is claimed:

**PRIOR FOREIGN/PCT APPLICATION(S)
AND ANY PRIORITY CLAIMS UNDER 35 U.S.C. § 119**

Country : Germany

Application No. : 197 35 607.9

Date of Filing: August 15, 1997

Priority Claimed

Under 35 U.S.C. § 119 : ☒ Yes ☐ No

I hereby claim the benefit under Title 35, United States Code § 120 of any United States Application or PCT International Application designating the United States of America that is/are listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in that/those prior application(s) in the manner provided by the first paragraph of Title 35, United States Code § 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations § 1.56(a) which occurred between the filing date of the prior application(s) and the national or PCT international filing date of this application:

**PRIOR U.S. APPLICATIONS OR
PCT INTERNATIONAL APPLICATIONS
DESIGNATING THE U.S. FOR BENEFIT UNDER 35 U.S.C. § 120**

U.S. APPLICATIONS

Number :

Filing Date :

**PCT APPLICATIONS
DESIGNATING THE U.S.**

PCT Number :

PCT Filing Date :

I hereby appoint the following attorney(s) and/or agents to prosecute the above-identified application and transact all business in the Patent and Trademark Office connected therewith.

(List name(s) and registration number(s)):

2 Richard L. Mayer, Reg. No. 22,490
Gerard A. Messina, Reg. No. 35,952
_____, Reg. No. _____
_____, Reg. No. _____

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Facsimile No.: (212) 425-5288

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment or both under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

1-11

Full name of inventor Michael WOLLBORN

Inventor's signature  Date 16.02.2000

Citizenship Federal Republic of Germany

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30455 Hannover
Federal Republic of Germany DEX

Post Office Address Same as above